5.5 Use of Institutional or Technological Controls

Purpose: The purpose of an institutional control is to restrict access to or use of property such that an applicable receptor could not be exposed to chemicals of concern for as long as the target level is exceeded at applicable points of exposure and compliance.

Institutional controls include:

1. A law of the United States or the state;
2. A regulation issued pursuant to federal or state laws;
3. An ordinance or regulation of a political subdivision in which real estate subject to the institutional control is located;
4. Activity and use limitations placed on property for the purpose of managing future risks of exposure. These activity and use limitations must be incorporated into an environmental covenant approved by the Department. See the UST section website;
5. Any other institutional control the owner or operator can reasonably demonstrate to the department will reduce the risk from a release throughout the period necessary to assure that no applicable target level is likely to be exceeded.

Modification or termination of institutional and technological controls:
At a point when DNR determines an institutional or technological control has been removed or is no longer effective for the purpose intended, regardless of the issuance of a no further action certificate or previous site classification, it may require owners and operators to reevaluate site conditions to determine an appropriate site classification and corrective action response.

If the owner or operator is in control of the affected property, DNR may require reimplementation of the institutional or technological control or may require a Tier 2 assessment of the affected pathway(s) be conducted to reevaluate the site conditions and determine alternative corrective action response. An owner or operator subject to an institutional or technological control may request modification or termination of the control by conducting a Tier 2 assessment of the affected pathway or conduct such other

assessment as required by the department to establish that the control is no longer required given current site conditions.

If the owner or operator is not in control of the affected property or cannot obtain control and the party in control refuses to continue implementation of an institutional control, the DNR or the owner or operator may take such legal action as available to enforce the institutional controls or may require the owner or operator to undertake a site assessment to determine site classification and an alternative corrective action response.

If a person in control of the affected property appears to be contractually obligated to maintain an institutional or technological control, DNR may, but is not required to, attempt enforcement of the contractual obligation as an alternative to requiring corrective action by the owner or operator.

If a site is classified no action required, subject to the existence of an institutional control or technological control, the holder of the fee interest in the real estate subject to the institutional control or technological control may request, at any time, that DNR terminate the institutional control or technological control requirement. DNR may terminate the requirement for an institutional control if the holder demonstrates by completion of a Tier 2 assessment of the applicable pathway or other assessment as required by DNR the site conditions warranting the control no longer exist and the site or pathway has met exit criteria for no action required classification.

5.5.1 Local ordinances as institutional controls for groundwater ingestion pathways

Institutional controls may be used at both Tier 1 and Tier 2 to restrict installation of drinking and non-drinking water wells, as those terms are defined in rule 135.2. These controls may be used to obtain no action required status for a groundwater ingestion pathway classified as low risk due to potential receptor conditions. Institutional controls must be “effective” to restrict future well construction within the area of the receptor ID plume which exceeds the Tier 1 levels for potential receptors. In some cases where the number of affected parcels of property is limited, an environmental covenant may be the

most efficient and effective method to achieve this purpose. In other cases, local ordinances which restrict the installation of private wells due to the availability of public water systems may be sufficient to effectively restrict future installation of drinking and nondrinking water wells. A combination of environmental covenants and local ordinances may be designed to meet these objectives as well.

Generally, if an effective institutional control cannot be achieved, the options for the responsible party would be to:

(1) periodically check to determine if drinking and non-drinking water wells have been installed or permits processed, and monitor contaminants until concentrations fall below the Tier 1 level for potential receptors; or
(2) remediate contaminants to below the Tier 1 levels; or
(3) conduct a Tier 3 evaluation to reassess the risks associated with the potential receptor area of concern.

Department rules in Chapter 38 and 49 regulate the permitting and construction of private wells. Under Chapter 38 counties may accept delegated authority for the permitting of private wells and all but approximately 20 counties have formal delegated authority implemented through a 28E agreement with DNR. Chapter 38 and Chapter 49 establish very general considerations for denial of well permits but also specify mandatory separation distances for certain sources of potential contamination. (e.g., wells must be located at least 100 feet from USTs).[1]

There is considerable discretion given the permitting authorities under these rules and delegated authorities. At this point, there is a great deal of uncertainty regarding DNR's authority to deny well permits and the criteria to be applied in considering applications

[1] 567 IAC 38.12 states that the "...department may deny a private well construction permit if granting the permit would lead to the violation of state law, would result in groundwater contamination, would lead to withdrawal from a protected source; or the director determines that the well would threaten public health or the environment..." 567 IAC 49.6 (as adopted by the EPC on 3/16/98) reads as follows, "....Wells shall be located with consideration given to the lot size, contour, porosity and absorbency of the soil, local groundwater conditions, flooding, and other factors necessary to implement the rules. The lack of specific distances to other possible sources of contamination...does not minimize their potential hazard. These must be evaluated in each particular situation and a distance arrived at that is based on pertinent facts."

for private well permits where the proposed location is within or near an actual groundwater or soil plume or within a modeled groundwater plume.

There are conflicting policy objectives between the right of a permittee to use uncontaminated groundwater which may or may not be threatened by contamination depending on the reliability of plume data, simulations and well design and construction, and the objective of avoiding expensive, long-term, and often impractical and ineffective remediation of groundwater contamination. Because of the substantial degree of discretion and the uncertainty of standards in applying Chapter 38 and Chapter 49 rules and county ordinances regulating well permitting under delegated authority, DNR is not considering these authorities as effective institutional controls until more definitive policy and permitting standards are developed.

Local Ordinances Regulating on the Basis of Availability of Public Water Supply. Most counties and metropolitan areas have ordinances which regulate the permitting of private water wells when a public water supply is “readily available”. Generally, these ordinances restrict the construction of “private wells” whenever public water is “readily available” but also reserve exception authority to grant variances. These types of ordinances may provide a much more reliable basis for restricting well construction within the area of concern and may serve as an effective institutional control if the county or municipal permitting authority is prepared to meet certain conditions outlined below.

These ordinances may specifically state the county is exercising its authority in the county and within municipal jurisdictions or the county may have entered into 28E agreements with certain large municipalities to clarify and resolve any issues of conflicting jurisdiction. In some cases, a municipality may also have adopted a similar ordinance. These ordinances may or may not define “private well” to include DNR’s definition of “non-drinking water wells”. Typically, there will also be a provision giving the permitting authority variance or exception authority. In order for these ordinances to be considered an effective institutional control, the groundwater professional must submit the following documentation as part of a request for approval as an institutional control:

- A copy of the entire county and municipal ordinance regulating well permitting and any applicable 28E agreement which clarifies jurisdiction within the relevant municipality.[2]
- A copy of a letter to the permitting authority acknowledging it has been provided
    (1) the necessary soil plume and groundwater receptor ID plume maps showing the extent of the actual plume and simulated plume (area of concern);
    (2) the definition of drinking and non-drinking water wells from 567 IAC 135.2; and
    (3) a diagram showing the location of the public water deliver system in relation to the area of concern.

The letter must explain that the purpose of the request is to obtain an assurance that the permitting authority would not permit a drinking or non-drinking water well within the proposed area of concern. See the UST section website and groundwater professional bulletin board for updates to this policy, cities and counties with acceptable ordinances and model certification letters.

- A letter from the permitting authority consistent with DNR's model letter in Appendix E2 which confirms that
    (1) the authority has jurisdiction over the area of concern;
    (2) the permitting authority has made a determination that a public water supply is "readily available" within the meaning of their ordinance in the area proposed to be subject to the private well restriction;
    (3) the permitting authority "would not" or "would not likely" permit a "drinking or non-drinking water well" as defined in 567 IAC 135.2 within the area proposed to be subject to the control due to the presence of public water and
    (4) the permitting authority will make a reasonable effort to notify the DNR UST section of any permit application, approval or denial within the proposed area of concern.

[2] As the department develops a file of all relevant ordinances, this requirement may be waived.

DNR will review the information submitted by the groundwater professional and independently determine if the terms of the ordinance and the permitting authority's written assurance is sufficient to warrant approval as an effective control.

Although not the general rule, DNR may require the groundwater professional certify in writing that property owners within the area of concern have been provided a copy of Appendix E3: Notification of Petroleum Contamination and Private Well Restriction. This notification would generally be limited to exceptional situations where DNR determines the need to increase the effectiveness of the ordinance when balanced against the risks of future exposure.

As DNR has the opportunity to review county ordinances and obtain advisory opinions on the interpretation and application of the ordinance to obvious situations where a public water supply is available, the requirements to obtain advisory opinions on a site-by-site basis from the permitting authority may be waived. See the UST section website and groundwater professional bulletin board.

5.5.2 Environmental Covenant

Under specified conditions, an environmental covenant, which limits the risk of exposure to contaminated soil and/or groundwater, may be used as an institutional control to restrict future activities at a site. [See 567 Iowa Administrative Code 135.12(8).] An environmental covenant may be used in combination with other institutional controls or technological controls to reclassify a potential receptor to a no action required classification. In some cases, the environmental covenant may be a "partial institutional control", which restricts activities on a portion of the larger area of concern. This would not change the low risk classification, yet a partial institutional control might limit monitoring requirements. To reclassify a pathway to no action required, the risk to all actual receptors must be eliminated and an environmental covenant must be obtained to restrict future placement of actual receptors.

To be considered an effective control, an environmental covenant must meet three basic standards:

(1) the instrument itself and other supporting instruments must be executed to ensure they are legally valid and enforceable against persons with a present or future interest in the property; and

(2) the parcel and any areas within a larger parcel subject to the covenant restrictions must be legally described with reference to the soil or groundwater area of concern.(i.e., the appropriate receptor ID plume); and

(3) the activity and use limitations must adequately define the receptors that are being restricted and other activities necessary to prevent the future exposures which the RBCA rules regulate.

A model environmental covenant for use at LUST sites can be found on the UST section's website: http://www.iowadnr.com/land/ust/index.html.

The following is additional guidance for what supporting documentation needs to be submitted for Department review and approval of an environmental covenant. Additionally, model language is provided, which can be used to ensure that the restrictions placed on the area(s) of concern comply with the Department's UST rules.

1. STEPS TO GET DNR APPROVAL:

Prior Approval Before Recording: Before recording the instrument with the county recorder, the responsible party (RP) and the certified groundwater professional must submit the environmental covenant to the Department for approval and satisfy all of the following requirements. It is recommended that you do not obtain signatures until it is reviewed and approved.

- Environmental Covenant Document—A model environmental covenant document must be used as provided by the Department. (see Department website) A modified form of the environmental covenant document may be

proposed, but any revisions to the model form must be explained and specifically identified by a cover letter.

- Model Title Certification Letter—A model title certification letter is required from a certified groundwater professional, or an opinion letter from an Iowa licensed attorney, which certifies that that sufficient title research has been done to identify all necessary legal and equitable interests and that their preliminary consent has been obtained. . Supporting documentation must be submitted as provided below. A model certification letter is provided in Appendix E4 of the Tier 2 guidance.
- Supporting documentation. Proof of ownership or other legal or equitable interests required for the covenant must be submitted by providing copies of the applicable deeds, contracts, mortgage instruments, etc.
- A Current Plat Map—A plat map or other map certified by the groundwater profession must show the property affected by the environmental covenant and show the boundaries of the property as legally described in the covenant. The purpose of the map is to allow the Department to independently determine that the property as legally described in the covenant corresponds to the area of concern provided in the technical maps and diagrams submitted to the Department in a tiered site assessment or other assessment submittal. A current plat map may be obtained from the county assessor's office.
- Receptor Identification Plume Map—A receptor identification plume (receptor ID) map must show the property affected by the environmental covenant as it relates to the current and simulated soil and/or groundwater plume.
- Subordination and Consent. —Unless all persons required to consent or subordinate interests such as mortgagees or other consensual lienholders choose to sign the covenant, a separate subordination and consent agreement must be submitted. A model subordination agreement is provided on the UST section's website.
- Groundwater Professional Summary Statement—The groundwater professional must submit a summary statement describing how the environmental covenant will be used to achieve reclassification of the pathway and/or site. The

groundwater professional must explain if one or more environmental covenant(s) or combination of institutional controls will be used to cover the area of concern.

2. FORMS: **Certification Form and Supporting Documentation.**

Property Owners

The affected property may be owned by a person holding a deed, such as a warranty deed or deed of trust, or the property may have been conveyed by a contract, in which there is a contract seller(s), a contract buyer(s), or person(s) who have obtained an assignment of the contract seller's or buyer's interest. The owner, who could be a single or married person, a partnership, corporation, or public entity, must be accurately identified. The owner(s) of the real estate including a contract seller/buyer or contract assignee are required to sign the model environmental covenant document.

Financial Institutions

In some situations financial institution(s), or other person(s), may hold the recorded mortgage(s) or other consensual liens on the property. It will be necessary to obtain consent from these parties to “subordinate" their interests to the terms of the environmental covenant. They can sign the covenant or submit a separate subordination and consent agreement.

To ensure the instrument is properly executed, it is the responsibility of the responsible party and groundwater professional to conduct a sufficient search of the real estate records to identify all legal and equitable interests in the property and ensure the environmental covenant and any supporting instruments are properly prepared and executed. This documentation must be submitted to the DNR for review. **It is in the responsible party's best interest to make sure this environmental covenant is valid and enforceable since any subsequent challenge to validity would be a basis for reopening DNR regulation of the site.**

Use of an Attorney

Parties are encouraged, but not required, to use the services of an Iowa licensed attorney to prepare and execute required documentation. If the responsible party uses an attorney, the Department requires submission of a title opinion or letter which certifies that sufficient research has been done to identify and obtain consent of all legal and equitable interests necessary to validate the covenant. The scope of the title opinion or certification is within the discretion of the attorney.

The following offers some general guidance to address the most common situations:

Researching the "owner". Unless an attorney or the Department requires it, the real estate abstract does not normally need to be updated. It is recommended that it be used to determine the proper person(s) or legal or equitable interests, necessary to create a valid environmental covenant.

Deed holders: In most cases, the county assessor's or auditor(s) office can provide the name of the current "owner" and legal description of the property and a reference to where the property transfer instrument is filed in the county recorder's office. The assessor's records, or the recorder's records, can be used to identify the type of interest the current owner holds. For example, the owner may have a "fee title" interest because they hold title under a "warranty deed" or a "deed of trust". If the owner has a fee title interest, the environmental covenant will be adequately executed if all persons are named on the environmental covenant exactly as they appear on the deed and all named persons sign the environmental covenant. (Note there may be other conflicting interests that need additional consideration.) The actual recorded deed needs to be submitted with the environmental covenant application materials.

Contract transfers:

The assessor's or recorder's records may show that the current owner is a person, or entity, who owns the property by virtue of a contract sale, i.e., the current owner is the contract/buyer. In this situation, the contract/buyer holds the "equitable interest" (e.g., the right to possession and control of the property) and the contract/seller holds the "legal"

interest, i.e., the property deed, until the contract is “paid off” and the deed transferred. In these cases, the contract/buyer and the contract/seller will be required to sign the environmental covenant.

A variation to the above scheme is if records indicate that the contract/seller or the contract/buyer has “assigned” their interest to a third party. In this case, all the parties obligated under the contract are required to sign the environmental covenant or provide a recordable affidavit which consents to the terms of the environmental covenant and waives any further notice or deficiencies in the form or substance of the environmental covenant.

In some situations, the legal status of the contract/seller and the contract/buyer or any assignees can be uncertain because one or more parties may have filed a “quit claim” deed. A quit claim deed does not necessarily convey an interest in the property to another party but is usually signed only by one party which unilaterally disclaims any interest in the property. Sometimes a contract/buyer files a quit claim deed to terminate the contract so that the property interest, “goes back”, or reverts to the seller. In this situation, the contract/buyer who has quit claimed their interest must also sign on to the environmental covenant.

Mortgages and subordination and consent agreements. The assessor’s and/or recorder’s records show recorded mortgages or other possible consensual security interest agreements, liens or property fixtures. Unless there is a recorded document showing these interests have been fully satisfied, the “mortgagees” or consensual lienholders must sign the covenant or a separate “subordination agreement”. A model subordination and consent agreement is available on the Department's website.

Leaseholders. If the property is subject to a lease agreement, the tenant or lessee must sign the covenant, complete an affidavit or model subordination and consent agreement.

3. MODEL LANGUAGE. The following is model language for most restrictions allowed in environmental covenants for underground storage tank (UST) sites. The

restrictions are broken down by pathways for Tier 1, Tier 2 and special bedrock conditions governed under DNR rule 135.10(3).

With a Tier 1 classification, the restricted area is defined by a specified distance from the source (i.e., location of maximum contaminant concentration). With a Tier 2 classification, a receptor identification (ID) plume defines the restricted area for a potential receptor. The receptor ID plume shows either (a) the actual soil plume plus a specified distance or (b) the actual and modeled groundwater plumes which exceed the target level applicable to potential receptors.

The environmental covenant for any one parcel may need to cover the entire boundaries of the parcel, and/or extend off-site in a separate environmental covenant, and/or define the restricted activities by reference to the receptor ID plume maps that depict the area of concern. However, if the area of concern extends off-site, low-risk monitoring may be conducted until the site-specific target level is reached rather than obtain an environmental covenant on off-site properties. Additionally, to classify a potential receptor as no action required, the environmental covenant may include more than one parcel and therefore more than one environmental covenant may be necessary. Regardless, the environmental covenant for any parcel may need to cover the entire boundaries of the parcel. The following model language applies to an area within the boundaries of the property and to the entire property.

TIER 1 Model Language

Groundwater ingestion and soil leaching to groundwater ingestion pathway:
Under rule 135.9(4), if Tier 1 levels for potential receptors for the groundwater ingestion and soil leaching to groundwater ingestion pathways are exceeded, institutional controls must restrict installation of both “drinking water” and “non-drinking water” wells as defined in 135.2 within 1,000 feet of the source(s) to obtain pathway clearance. The following is model language acceptable for describing the restriction in the model environmental covenant.

Restrictions on Use: *No drinking water or non-drinking water wells as defined in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code135.2 and as*

subsequently amended shall be installed within the boundaries of the property. For purposes of reference, drinking water well means, "Any groundwater well used as a source for drinking water by humans and groundwater wells used primarily for the final production of food or medicine for human consumption in facilities routinely characterized with the Standard Industrial Codes (SIC) group 283 for drugs and 20 for foods (or the North American Industry Classification System (NAICS) Codes of 3254 for drugs and 311 for food)." Non-drinking water well means, "any groundwater well (except an extraction well used as part of a remediation system) not defined as a drinking water well including a groundwater well which is not properly plugged in accordance with department rules in 567-Chapters 39 and 49."

Groundwater and soil vapor to enclosed space pathways: If Tier 1 levels for the groundwater and soil vapor to enclosed space pathways are exceeded, an institutional control must restrict the construction of "enclosed spaces" (as defined in 135.2) within 500 feet of the source(s). These restrictions are limited and may only apply in selective circumstances. The following is model language acceptable for describing this restriction in the model environmental covenant instrument:

Restrictions on Use: *No enclosed spaces, as defined in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code and as subsequently amended, shall be constructed within the boundaries of the property. For purposes of reference, an enclosed space means, 'space which can act as a receptor or pathway capable of creating a risk of explosion or inhalation hazard to humans and includes "explosive receptors" and "confined spaces". Explosive receptors means those receptors designated in these rules (sic Chapter 567 IAC 135) which are evaluated for explosive risk. Confined spaces means those receptors designated in these rules (sic Chapter 567 IAC 135J) for evaluation of vapor inhalation risks.' Enclosed spaces may include subsurface structures such as buildings with basements, utility vaults, and storm and sanitary sewers.*

TIER 2 Model Language

Groundwater ingestion and soil leaching to groundwater ingestion pathways: With a Tier 2 classification, the institutional control must restrict the installation of drinking or nondrinking water wells as defined in 135.2 at all points within the applicable receptor ID plume. As a practical matter, this means for any particular parcel, if the receptor ID plume covers any part of the parcel, the environmental covenant must apply to that entire parcel.

It is also acceptable to define the restriction to the receptor ID plume so long as the receptor ID maps are specifically referenced in the covenant and attached as exhibits. The receptor ID maps must be accurately drawn to scale by reference to the legally described boundaries of the affected parcel and the area of the restriction must be clearly depicted.

The Tier 1 model language is acceptable for use at Tier 2 level, unless the restriction is tailored to the receptor ID plume rather than the entire parcel.

Vapor pathways: Twelve potential vapor receptor types are shown in the following table for the Tier 2 level:

Confined Space Receptors		**Sanitary Sewer Receptors**	
Groundwater vapor	residential	Groundwater vapor	residential
	nonresidential		nonresidential
Soil leaching to groundwater vapor	residential	Soil leaching to groundwater vapor	residential
	nonresidential		nonresidential
Soil vapor	residential	Soil vapor	residential
	nonresidential		nonresidential

If the explosive receptor survey did not identify an exceedence and one or more of these receptor types are classified low risk for potential receptors, the terms of the environmental covenant must restrict all enclosed spaces, which are defined as “confined spaces” ?and “sanitary sewers,” See 135.10(6) & (7) and Tier 2 Site Cleanup Report.

Guidance. The environmental covenant language must restrict installation of confined spaces or sanitary sewers on those properties which are within the applicable receptor ID

plume and designated with the applicable zoning of “residential” or “nonresidential” as defined in 135.2.

The restriction may be defined to those areas that are within the applicable receptor ID plume and the applicable zoning, as long as the receptor ID maps (with zoning clearly shown) are specifically referenced in the environmental covenant and attached as exhibits. The maps must be accurately drawn to scale by reference to the legally described boundaries of the affected parcel and the area of the restriction clearly depicted. However, this practice is discouraged.

The following is model language which may be used as a reference.

Option 1. Restrictions on Use of the Property. *No “confined spaces” as described in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code 135.10(6) (for groundwater vapor) and 135.10(7) (for soil vapor) shall be constructed within the boundaries of the property. Confined spaces includes basements in buildings occupied by humans.*

Option 2. Restrictions on Use within the receptor ID plume. *No “confined spaces” as described in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code 135.10(6) (groundwater vapor) or 135.10(7) (soil vapor) shall be constructed within the area of the applicable receptor ID plume as specified in DNR rule 135.10(6) (groundwater vapor) or 135.10(7) (soil vapor). Confined spaces include basements in buildings occupied by humans. For reference, the area of the receptor ID plume which exceeds the Tier 2 default levels and zoning are shown on the attached map as Exhibit* **.

Option 3. Restrictions on Use of the Property *Sanitary sewers shall not be constructed within the boundaries of the property if they are to be connected to a building within 200 feet. Sanitary sewers include the utility envelope and septic systems.*

Option 4. Restrictions on Use within the receptor ID plume. *Sanitary sewers shall not be constructed within any portion of the receptor ID plume which exceeds the Tier 2 default levels as specified in Iowa Department of Natural Resources Rule 135.10(6) (for groundwater vapor) and 135.10(7) (for soil vapor) if the sewer would be connected to a building occupied by humans within 200 feet of the point where sanitary sewer crosses over the actual or modeled plume. Sanitary sewers include the utility envelope and septic systems. For reference, the area of the receptor ID plume and zoning designations are shown on the attached map as Exhibit ** .*

SPECIAL BEDROCK CONDITIONS Model Language

Where bedrock is encountered before groundwater and the conditions meet the definition of granular or non-granular bedrock, institutional controls may be used for sites classified as low risk due to potential receptors.

Groundwater ingestion and soil leaching to groundwater ingestion. For any site classified low risk due to potential receptor conditions, installation of drinking and non-drinking water wells is restricted within 1,000 feet of the source. Therefore, use of the above model language applicable to Tier 1 groundwater ingestion pathways would be acceptable.

Groundwater Vapor Pathway. For any site classified low risk due to potential receptors, installation of "confined spaces" must be restricted within 50 feet of the soil gas plume as required under rule 135.10(3)"h". Confined spaces are defined in the groundwater vapor rule at 135.10(6). Therefore, the same model language options described above for groundwater vapor would apply, except for substitution of the 50 feet limitation under option 2 and option 4. The soil vapor pathway would be the same as in non-bedrock conditions.

Option 1. Restrictions on Use of the Property. No "confined spaces" as described in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code 135.10(3)"h"

shall be constructed within the boundaries of the property. Confined spaces include basements in buildings that are occupied by humans.

Option 2. Restrictions on Use within the Soil Gas Plume. No “confined spaces” as described in Iowa Department of Natural Resources Rule 567 Iowa Administrative Code 135.10“h” shall be constructed within 50 feet of the soil gas plume defined to the soil vapor target levels. Confined spaces include basements in buildings occupied by humans. For reference, the area of the soil gas plume that exceeds the soil vapor target levels and the 50-foot extension is depicted in the attached plume map as Exhibit **.

Option 3. Restrictions on Use of the Property. Sanitary sewers shall not be constructed within the boundaries of the property if they are to be connected to a building within 200 feet . Sanitary sewers include the utility envelope and septic systems.

Option 4. Restrictions on Use within the soil gas plume. Sanitary sewers shall not be constructed within 50 feet of the soil gas plume which exceeds soil vapor target levels as specified in Iowa Department of Natural Resources Rule 135.10(3)“h” if the sanitary sewer would be connected to a building occupied by humans within 200 feet of the point where sanitary sewer crosses over or is within 50 feet of the soil gas plume. Sanitary sewers include the utility envelope and septic systems. For reference, the area of the soil gas plume which exceeds the soil vapor target levels plus the 50-foot extension is depicted in the attached plume map as Exhibit **.